Working Papers

ISSN 0847-320X

of the Canadian Waterfront Resource Centre

No. 3

SOIL CONTAMINATION AND PORT REDEVELOPMENT IN TORONTO

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This paper is an updated and amended version of a paper presented at "Toronto's Changing Waterfront: Perspectives from the Past", a symposium sponsored by the Toronto Harbour Commissioners, Toronto 3–4 November 1989. Opinions stated herein are those of the author alone.

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90-05867/

Canadian Cataloguing in Publication Data

Munson, William E.

Soil contamination and port redevelopment in Toronto

(Working papers of the Canadian Waterfront Resource Centre, ISSN 0847-032X; no. 3)
Includes bibliographical references.
ISBN 0-662-17729-0
DSS cat. no. Z1-1988/1-42-3E

1. Soil pollution — Ontario — Toronto Metropolitan Area. 2. Waterfronts — Ontario — Toronto Metropolitan Area — Planning. 3. City planning — Ontario — Toronto Metropolitan Area. I. Royal Commission on the Future of the Toronto Waterfront (Canada). II. Title. III. Series.

TD878.M86 1990 363.73'96'09713541 C90-098612-3

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Cat. No. Z1-1988/1-42-3E
ISBN 0-662-17729-0

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INTRODUCTION

Soil contamination is an important legacy of the industrial past and present of Toronto's Port Industrial District, and may be an important factor in determining the future of the district. Toronto's Port Industrial District was created by lakefilling in accordance with the Toronto Harbour Commission's 1912 waterfront plan [1]. The district has been used or held almost exclusively for industrial purposes since its creation, with the exception of Cherry Beach.

In 1912, almost all of what is now the Port Industrial District was a marsh. The marsh was bound by fringes of land along its southern and western edges. Even in 1912 the northern extremity of the western fringe was already occupied by heavy industry — in this case the Foundry Specialty Company.

By 1925, Toronto Steel, Anthracite Briquette, Disher Steel, Baldwin Steel, Imperial Oil, Toronto Coal and Barrett Roofing had located in the Port Industrial District. In subsequent decades, Toronto Hydro, and a large number of other coal, oil and fuel companies, recyclers and other industrial operations took sites in the 364.2 hectare (900 acre) district [2].

As is generally recognised, such heavy industries have emitted considerable amounts of pollution into the air, water, and soil in the past, although modern environmental protection legislation should ensure that such pollution is now limited. While past air and water poliution will have dissipated long ago, it is likely that the soil of many, if not all, former and current heavy industrial sites will be contaminated with potentially high levels of a variety of metals and toxic organic chemicals. Abandonment of industrial sites has not been accompanied by thorough cleanup until very recently [3]. Some sites have been occupied by more than one type of use, and consequently may be contaminated with complex mixtures of heavy metals and organic chemicals.

A recent report from the Metropolitan Toronto Commissioner of Works to the Metropolitan Works Committee indicates the kinds of problems that occur [4]. The report concerns a site that Texaco Canada occupies in the Port district. A predecessor to Texaco Canada operated an oil refinery on the northern 4 hectares (ten acres) of the site on Commissioners Street from 1926 until 1949. The processing units were then removed, and the site became a terminal for the storage and blending of refined products, gasoline, stove oil and diesel fuel. In 1984, storage operations were transferred to another Texaco facility. A blending and grease plant, constructed at the site in 1948, remains in operation.

The site has been contaminated with spilled fuel oil over the years. In October 1988, the Toronto Fire Department was called to investigate hydrocarbon vapours in the sanitary sewer line on a neighbouring property to the east. The vapours were traced to the sanitary sewer adjacent to Texaco, and it was discovered that petroleum was entering a sanitary line at the front of Texaco's property [5].

SOIL CONTAMINATION

Soil contamination may occur on industrial sites as a result of the following:

- fabrication of objects from substances that can be toxic at certain concentrations;
- the use of toxic chemicals in industrial processes;
- the manufacture of toxic products or by-products;
- spills during maintenance and transshipment activities or accidents;
- intentional dumping of wastes on the premises; or
- bearing in mind the Texaco example, the in-migration of contaminants from neighbouring sites.

Contamination is a concern because of the known danger posed to human and environmental health by metals such as lead, mercury and cadmium, and by organic chemicals such as some PCBs, PAHs and other substances. Additional health and environmental effects of further substances remain to be documented.

In Ontario, when an industrial site is to be abandoned or redeveloped, it generally must first be cleaned up in accordance with the Ontario Ministry of the Environment's Guidelines for the Decommissioning and Cleanup of Sites in Ontario, which were formally published in February 1989 [6]. Guidelines for re-use for residential, parkland and agricultural purposes are much stricter than are those for re-use for commercial or other industrial purposes. Acceptable levels were established on the basis of studies of human health, the health of grazing animals and toxicity to plants, depending upon the substance.

The cleanup guidelines list metals and other substances that should be tested for in all cases of site cleanup. The Ministry can also require that testing be done for additional chemicals, particularly organic chemicals, in addition to the standard set. As such a requirement would in most cases be based on knowledge of past uses of the site, it is clear that accurate and detailed historical information can be critically important for both proponents and reviewers of redevelopment schemes. Historical information can also be used to identify areas of sites that will require special attention in sample collection. Sampling is generally done from boreholes located across the site.

IDENTIFICATION OF CONTAMINANTS

Although the exact magnitude of contamination problems can only be determined on a site-by-site basis, basic historical research can suggest where to look on a given site, and what to look for. Because the Port Industrial District dates from 1912 at the earliest (with the exception of the fringes of land noted above), one need not go back too far in compiling a complete historical record of industrial uses in the area. The available historical sources provide us with a long list of industries that have been, or are still, located in the Port district, and can be used to determine period of operation. They can also suggest where certain processes or operations were located on a given industrial site. General scientific and technical texts allow us to identify what processes would likely have been used by particular industries during

particular periods of time, and what raw materials, products, process chemicals and by-products may have been involved.

QUALITY OF FILL MATERIAL

The above considerations apply not only to the Port Industrial District, but also to the redevelopment of any industrial site in Toronto or elsewhere in the province. A special wrinkle in the case of the Port district is the question of the quality of the fill that was used to create the land. We know that most of the district was filled using relatively clean marine sand that was dredged hydraulically from the lake bottom before 1935 [7]. However, the land at the very southeast of the Port Industrial District, near the base of the Leslie Street Spit, was filled relatively recently using hauled fill. A report prepared for the Metropolitan Toronto Works Department suggests that municipal refuse, sewage sludge from the nearby treatment plant, and incinerator ash from the nearby Hearn generating station, may have been used as well [8]. So even though the land has never been developed or put to a significant industrial use, there is some chance that tests will show appreciable contamination by metals and possibly other substances.

CLEANUP COSTS

The more thorough the cleanup, the higher the cost. The costs of historical research, sampling and analysis are minor compared to the very substantial costs of offsite disposal of contaminated soil or of onsite treatment. It has been reported that the cost of environmental cleanup of the Ataratiri site to the north and west of the Port Industrial District will be in the neighbourhood of $80 million for just 27.1 hectares (67 acres) [9]. This suggests that cleanup of the Port district could cost several hundred million dollars.

Until recently, offsite disposal of contaminated soil from the Port district would probably have meant disposal in Lake Ontario to created additional land at the

nearby Leslie Street Spit lakefilling site. However, the Toronto Harbour Commissioners decided in 1989 not to accept contaminated fill at the Spit [10].

Although other lakefilling sites in Metropolitan Toronto may be available to accept contaminated material, it is at this point probable that most of whatever soil is eventually removed from the Port Industrial District will be sent inland for disposal at sanitary landfill sites, disused pits and quarries, and, where contamination levels are very high, designated hazardous waste disposal sites such as the Tricil facility in Sarnia.

Onsite treatment techniques include simple capping with a sufficient layer of clean fill, a number of soil vitrification and solidification technologies, soil washing procedures, and what is called land farming. Which technique is chosen will depend upon the nature and level of contamination, the size of the site being cleaned up, relative costs and the demands of regulatory authorities.

PORT REDEVELOPMENT SCHEMES

Concern regarding soil contamination in the Port Industrial District is topical because in recent years there have been a number of proposals that would see redevelopment of substantial portions of Toronto's Port district [11]. Most recent has been the proposal by the Toronto Ontario Olympic Council to site housing and facilities for athletes, officials and staff of the 1996 Olympics on land west of Cherry Street, between the Keating Channel and the Ship Channel. After 1996, the Olympic village would become permanent housing, with ancillary commercial and recreational facilities already in place [12].

Although the port site for the Olympic village has now been removed from Toronto's formal bid for the 1996 Olympics, the initial proposal is an important variation of a significant and not uncommon vision for Toronto's waterfront. There has been speculation by City councillors, reported in the press [13], that the recent Declaration of Provincial Interest in Toronto Waterfront Lands is a move by

the Province to force the Olympic village, and possibly more, onto the Port [14]. (This has been denied by the Province [15].) The Province's move is widely, if perhaps not correctly, seen as amounting to a freeze on industrial development in the Port Industrial District, so as to leave the land available for housing and mixed use. At this point the Province has not indicated what exactly it intends to do other than to piggyback a provincial public inquiry onto the mandate of David Crombie's Royal Commission on the Future of the Toronto Waterfront. In the meantime, the planning debate will continue.

THE PLANNING DEBATE

The usual waterfront planning vision — redevelopment of industrial and port land for housing and mixed use — is an enticing one. However, there is a significant body of opinion that favours retaining the Port district for industry [18]. The basic argument is that the City needs industrial jobs, and hence that it needs a large, secure industrial area that can accommodate those jobs [19]. Given that Toronto also needs a port area of some size, the Port Industrial District is seen as fulfilling two important functions.

City Council and the Toronto Harbour Commissioners have both expressed strong commitment to the notion of maintaining the Port Industrial District as a purely port-and-industrial area (except Cherry Beach). City Council's commitment was expressed in the adoption of the Central Waterfront Official Plan and Zoning By–Law Amendments in June 1988 [16]. The THC's commitment is reflected in the Port Industrial District Concept Plan of 1988 [17]. Neither includes housing or any of the mixed-use developments that are common features of so-called 'revitalised' waterfronts.

ENVIRONMENTAL AUDITS

Many millions of dollars will need to be spent just to return the contaminated land of the Port district to current acceptable standards for industrial use, and many more millions will need to be spent to clean up the area to stricter residential standards if redevelopment is to be for housing. In order to minimise uncertainty around costs, there should be a thorough audit and evaluation of environmental conditions before any cleanup can proceed.

The THC, in consultation with City staff, has initiated a study by consultants that should result in a comprehensive cleanup strategy for the Port Industrial District. The eventual goal of this strategy would be "to evaluate and remediate, where necessary, contaminated soils throughout the Port Industrial District to an acceptable industrial standard" [18]. More specifically, the consultants have been asked to advise the THC on such issues as the current regulatory and policy framework, potential impacts of contaminated soils, co-ordination of landowners and tenants who may wish to be involved in a comprehensive approach and liability and cost implications. Should a comprehensive approach prove realistic the consultant will recommend a cleanup strategy [20]. This should lead to testing of soils across the Port district, and to cleanup of industrial sites where appropriate.

It appears likely that at least the initial evaluative phase of this work will be duplicated in the audit of waterfront lands that is being carried out by a team assembled by the office of the Royal Commission on the Future of the Toronto Waterfront. Although David Crombie was initially appointed by the federal government, he has been cross-appointed by the provincial government to undertake an 'environmental audit' of the Port Industrial District and adjacent waterfront land, among other things. "The purpose of the environmental audit is to undertake a scientific analysis of the environmental conditions in the Port Industrial Lands and East Bayfront to provide environmental baseline data as a firm

basis for future land use decisions" [21]. That task is in keeping with one of the recommendations in the Interim Report of the Royal Commission:

> A complete environmental evaluation of all THC lands should be undertaken immediately and should include tests of air, water and soil quality to identify and measure contaminants. That evaluation, as well as development of new standards for material used as lakefill, should take place before any major decisions are made on the future of the Port and the lands adjacent to it [22].

The audit is to include the following important components:

- compilation of information on past and current land uses, upon which the future soil sampling programme, etc., may be based;
- characterisation of environmental conditions of sub-units of the larger area, based on existing and new information;
- compilation of relevant environmental regulations, standards, guidelines, etc.;
- comparison of land-use options with health and environmental requirements; and
- development of a weighting system so that sub-units of the area may be compared [23].

The intention is that the Royal Commission will coordinate the study, and report findings to the federal, provincial, Metro and City governments. It is unlikely that the THC study and the provincial audit will be coordinated.

For its part, City Council has expressed "outrage and opposition to the Provincial government's action", which it sees as encroachment into a pre-eminently municipal concern, land-use planning. At its meeting of 16-17 November 1989, Council recommended that "there not be City staff participation in the Royal Commission proposed environmental audit", and that "the City participate

with the THC in developing a Master Plan for the testing and remediation of soils and the environment in the East Bay Front and Port lands to ensure that these lands meet standards satisfactory to the Medical Officer of Health and the Environmental Protection Office for industrial occupation and development" [24]. City Council also reaffirmed its strong commitment to the maintenance of the Port district as an area of industry, with appropriate recreation and public access [25].

CONCLUDING STATEMENT

The purpose of this paper is not to argue either for or against radical change to land-use patterns in the Port district, but to draw attention to a legacy of our industrial past that is an increasingly important element in planning for urban redevelopment in general. That legacy is soil contamination. Planning decisions regarding redevelopment of the Port Industrial District will need to factor in the relative cleanup costs for different uses.

Cleanup costs must be known prior to final decisions on land use, if those decisions are to be informed and responsible. Higher cost of cleanup to residential standards may well force developers into either high density or luxury housing (or both) to recoup cleanup costs. This could have a significant impact on the look and the liveability of the city.

NOTES

1. Toronto Harbour Commissioners (1912). *Toronto Waterfront Development, 1912-1920.* Toronto: Toronto Harbour Commissioners.

2. Since 1912, the Toronto Harbour Commissioners have had prepared annual or biennial maps of Existing Conditions, which indicate current lot boundaries, and the name of the owner or lessee of each. The earlier maps also delineate the progress of the lakefilling programme.

3. Personal communication with Toronto Harbour Commission staff, 1989.

4. Metropolitan Toronto Commissioner of Works (1989). 'Report regarding Charge for Sanitary Discharge from a Private Water System — Texaco Canada Inc.'. Toronto: Metropolitan Works Committee. 26 September.

5. The full text of an instructive excerpt from the report reads as follows:

   "McColl Brothers, a predecessor to Texaco Canada Inc., constructed an oil refinery on the northern ten acres of the site in 1925, which operated from 1926 until 1949. When the oil refinery was shut down in 1949, the processing units were removed and the site became an active terminal for the storage and blending of refined products, gasoline, stove oil and diesel fuel until 1984, when storage operations were transferred to Texaco's Nanticoke facility on Lake Erie. A Blending and Grease Plant was constructed at the Commissioners Street site in 1948 and remains in operation.

   "The site has been contaminated with spilled fuel oil over the years. On October 25, 1988, the Toronto Fire Department was called to investigate hydrocarbon vapours in the sanitary sewer line on Commissioners Street at a company east of the site. The hydrocarbon vapours were traced to the sanitary sewer adjacent to Texaco, and after some investigation and inquiries it was discovered that product was entering a sanitary line at the front of Texaco's property.

   "Texaco is proposing a remedial action plan to recover spilled fuel oil and control contaminated groundwater migration by drawing the water via eight on–site recovery wells."

6. Environment Ontario (1989). *Guidelines for the Decommissioning and Cleanup of Sites in Ontario.* Toronto: Queen's Printer for Ontario. February.

7. Yearly progress of the lakefilling operation was reported in the Annual Reports of the Toronto Harbour Commissioners, which have been issued since 1912.

The *Annual Report of the Toronto Harbour Commissioners for the Years 1915 and 1916* (Toronto: Toronto Harbour Commissioners, 1917) notes the following:

"*Dumping Grounds*: Cherry Street. During the year a dump for a clean material such as excavation, brick etc. was maintained on the east and west side of Fisherman's Road south of the swing bridge leading from Cherry Street into the Toronto Harbour Industrial District. This is the only area in which excavating contractors have to dump material east of Yonge Street and West of Broadview. We have been very fortunate in getting a lot of excavation from the site of the new Union Station. The number of loads of material deposited during the season was 23,926."

Subsequent annual reports do not report similar dumping until the late 1950s.

8. Proctor, Redfern, Bousfield and Bacon (1964). *Land Fill Study for Waterfront Development*. Toronto: Metropolitan Waterfront Technical Committee. November.

9. Kevin Donovan (1989). 'Toxic metals found at St. Lawrence Site'. Toronto: *Toronto Star*. 29 March.

10. Minutes of the meeting of the Board of Toronto Harbour Commissioners. 25 April 1989.

11. These include the widely discussed Magna proposal, Bold Concept, Bold Concept II and the original concept for the 1996 Olympics bid.

12. Toronto Ontario Olympic Council (1988). "Toronto '96" media kit.

13. See, for instance, 'Councillors call controls undemocratic' (18 October 1989. p. A6) and 'Ontario plans to protect lakefront, but for whom?' (23 October 1989. p. A17). Toronto: *Toronto Star*. .

14. Province of Ontario. Order in Council. 12 October 1989.

15. Letter to Mayor Art Eggleton and members of the Toronto City Council from John Sweeney, Ontario Minister of Municipal Affairs. 20 October 1989. Reproduced as part of Clause 13 of Executive Committee Report No. 39, which was considered by City of Toronto Council at its meeting of 16 and 17 November 1989.

16. City of Toronto. Land Use Committee (1988). Clause 1 of Report No. 14. 13 and 17 June.

17. Toronto Harbour Commission (1988). *Port of Toronto News* Vol. 35, No. 3. pp 6,7.

18. Refer, for instance, to the following:

    Jobs, Opportunities and Economic Growth Work Group (1989). *Jobs, Opportunities and Economic Growth*. Toronto: Royal Commission on the Future of the Toronto Waterfront.

    Labour Council of Metropolitan Toronto and York Region (1989). "Toronto Must Avoid Becoming "A Tale of Two Cities"". Toronto. 2 November.

    Desfor, Gene (1990). "Symposium Report: Urban Waterfront Industry: Planning and Developing Green Enterprise for the 21st Century". (Draft). Toronto. January.

19. Toronto Harbour Commissioners (1989). "Terms of Reference: A Master Plan for Decommissioning of the Port Industrial District". Released 14 November.

20. Ibid.

21. Royal Commission on the Future of the Toronto Waterfront (1990). "Environmental Audit of the Port Industrial Lands and East Bayfront: Structure and Work Plan" (Draft). 2 January.

22. Royal Commission on the Future of the Toronto Waterfront (1989. *Interim Report*. Ottawa: Minister of Supply and Services Canada. August. p. 118.

23. Royal Commission on the Future of the Toronto Waterfront (1990). Op Cit.

24. City of Toronto. Council (1989). Clause 13 of Report No. 39 of the Executive Committee, as amended. 16-17 November.

25. Ibid.

BIBLIOGRAPHY

Toronto Harbour Commissioners (1912). *Toronto Waterfront Development, 1912-1920*. Toronto: Toronto Harbour Commissioners.

Metropolitan Toronto Commissioner of Works (1989). 'Report regarding Charge for Sanitary Discharge from a Private Water System — Texaco Canada Inc.'. Toronto: Metropolitan Works Committee. 26 September.

Environment Ontario (1989). *Guidelines for the Decommissioning and Cleanup of Sites in Ontario*. Toronto: Queen's Printer for Ontario. February.

Annual Report of the Toronto Harbour Commissioners the Years 1915 and 1916 (Toronto: Toronto Harbour Commissioners, 1917)

Proctor, Redfern, Bousfield and Bacon (1964). *Land Fill Study for Waterfront Development*. Toronto: Metropolitan Waterfront Technical committee. November.

Donovan, Kevin. "Toxic metals found at St. Lawrence Site". Toronto: *Toronto Star*. (29 March 1989): p. A6.

Minutes of the meeting of the Board of Toronto Harbour Commissioners. 25 April 1989.

Toronto Ontario Olympic Council (1988). "Toronto '96" media kit.

'Councillors call controls undemocratic'. Toronto: *Toronto Star*. 18 October 1989. p. A6.

'Ontario plans to protect lakefront, but for whom?'. Toronto: *Toronto Star*. 23 October 1989. p. A17.

Province of Ontario. Order in Council. 12 October 1989.

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City of Toronto. Land Use Committee (1988). Clause 1 of Report No. 14. 13 and 17 June.

Toronto Harbour Commission (1988). *Port of Toronto News* Vol. 35, No. 3. pp 6,7.

Jobs, Opportunities and Economic Growth Work Group (1989). *Jobs, Opportunities and Economic Growth*. Toronto: Royal Commission on the Future of the Toronto Waterfront.

Labour Council of Metropolitan Toronto and York Region (1989). "Toronto Must Avoid Becoming "A Tale of Two Cities"". Toronto. 2 November.

Desfor, Gene (1990). "Symposium Report: Urban Waterfront Industry: Planning and Developing Green Enterprise for the 21st Century". (Draft). Toronto. January.

Toronto Harbour Commissioners (1989). "Terms of Reference: A Master Plan for Decommissioning of the Port Industrial District". Released 14 November.

Royal Commission on the Future of the Toronto Waterfront (1990). "Environmental Audit of the Port Industrial Lands and East Bayfront: Structure and Work Plan" (Draft). 2 January.

Royal Commission on the Future of the Toronto Waterfront (1989. *Interim Report*. Ottawa: Minister of Supply and Services Canada. August. p. 118.

City of Toronto. Council (1989). Clause 13 of Report No. 39 of the Executive Committee, as amended. 16-17 November.